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CHEMISTRY M R KRIGBAUM ET AL. 06 NOV 86 TR-1

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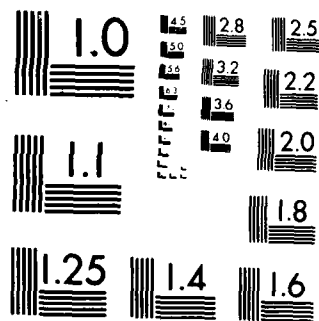
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MICROCOPY RESOLUTION TEST CHART  
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The phosphorylation reaction of Yamazaki and Higashi is used to prepare block copolymers of rigid and flexible aromatic units. Three procedures were explored, one of which gives less flexible homopolymer according to extraction results.

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Technical Report No. 1

**Nematogenic Block Copolymers of Rigid and Flexible  
Aromatic Units. I. Synthesis and Characterization**

by

**William R. Krigbaum, Jack Preston, A. Ciferri and Z. Shufan**

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We have used the phosphorylation reaction of Yamazaki and Higashi to prepare wholly aromatic block copolymers containing the rigid units poly(*p*-benzamide) (PBA) or poly(*p*-phenylene terephthalamide) (PPD-T) and the flexible units poly(*m*-phenylene isophthalamide) (MPD-I) or the polyterephthalamide of *p*-aminobenzhydrazide (PPD-T). Three synthetic procedures were investigated: (A) monomers of the flexible block were added to the rigid prepolymer, (B) monomers of the flexible block were added to the carboxy terminated rigid prepolymer, and (C) the reaction of the carboxy terminated prepolymer of the rigid block with amine terminated prepolymer of the flexible block. Extraction of the copolymer with a non-solvent for the rigid homopolymer indicates that method (B) gives the smallest amount of the flexible homopolymer. The extract from the PBA/MPD-I block copolymer was shown to be the flexible MPD-I homopolymer by NMR. The extract from the PBA/PABH-T copolymer could not be characterized by NMR due to overlapping of the spectra, but differential scanning calorimetry was used to identify the extract as PABH-T.

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